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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Technical Standards Committee "A"

Supplement No. 2, January 1989, to
REA Bulletin 43-5, List of
Materials Acceptable for Use on
Systems of REA Electrification Borrowers



The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of October through December 1988. The following changes should be made in order to keep it up to date. Pages with a comma between are on the same sheet, both being changed.

<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>	<u>Add</u> <u>New Page</u>	<u>Remove</u> <u>Page</u>
d	d	eh, ei	eh, ei
1-1, 1-2	1-1, 1-2	ej	ej
1(1) Cond.	1(1) Cond.	eq(1.1) Cond.	eq(1.1) Cond.
m-1	m-1	eq(2.1) Cond.	eq(2.1) Cond.
m-2	m-2	eq(2.3) Cond.	eq(2.3) Cond.
p-1	p-1	eu	eu
p-3	p-3	fm	fm
p-4, p-5	p-4, p-5	fn	fn
p-6, p-7	p-6, p-7	fs	fs
p-8	p-8	fv	fv
v-1	v-1	gj	gj
v-2	v-2	gw-1	gw-1
w	w	gy-1	gy-1
y-1, y-2	y-1, y-2	gz-1, gz-2	gz-1, gz-2
y-3	y-3	vx	vx
aa	aa	U be (Cond.)	--
ai-1	ai-1	U cg (Cond.)	U cg (Cond.)
ai-2, ai-3	ai-2, ai-3	U fz-1	U fz-1
aj	aj	U gc	U gc
an-3.2	an-3.2	U gk-2	U gk-2
an(1.1) Cond.	an(1.1) Cond.	U gn-2.1	U gn-2.1
an(2.1) Cond.	an(2.1) Cond.	U gp-1	U gp-1
an(3.2) Cond.	an(3.2) Cond.	U gp-2	U gp-2
bi	bi	U gu-1.1	U gu-1.1
bn, bo	bn, bo	U gv, U hb-1	U gv, U hb-1
br	br	U hb-2	U hb-2
bu	bu	U he-3	U he-3
cg(3) Cond.	cg(3) Cond.	U he-3.1	U he-3.1
cu	cu	U hw	U hw
dh	dh	U hx	U hx
du	du	U ja-1	U ja-1
eb	eb		

c - Bolt, machine

Applicable Specification: ANSI C135.1,
"Standards for
Galvanized Steel Bolts and
Nuts" except that the lengths
are in the ranges given below.

Applicable Sizes : 1/2 inch diameter, 6 through
10 inch length

5/8 inch diameter, 6 through
24 inch length

3/4 inch diameter, 6 through
26 inch length

7/8 inch diameter, 6 through
28 inch length

The following manufacturers have shown compliance with the applicable
specifications for machine bolts:

A. B. Chance Company
Dixie Electrical Manufacturing Company
Florida Wire and Cable Supply Division
Hughes Brothers
*Joslyn Manufacturing Company
Kortick Manufacturing Company
*McGraw-Edison
*Portland Bolt & Manufacturing Company
Power Line Hardware
The Rockford Bolt & Steel Company
Steel City Bolt & Screw Co., Inc.
Utilities Service Company



*"Static proof" design available.

d
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d - Washers
FLAT ROLLED STEEL

Size, inches:	2-1/4x2-1/4	3 x 3	4 x 4	4 x 4	1-3/8 round	1-3/4 round
Thickness, in.:	3/16	1/4	3/16	1/2	12 gauge	10 gauge
Hole Diam., in.	13/16	13/16	13/16	13/16	9/16	11/16

C & C Spacer	4					
Chance	6814	6817	6818	6819-1/2	6803	6805
Dixie	D6814	D6817	D6818	D6819-1/2	D6803	-
Hughes	SW2-70	SW3-70	SW4-70	SW4-70(1/2)	RW1-3/8-50	-
Joslyn	J1076	J1079	J1080	J1473	J1086	J1088
Kortick	K1553	K1555	K1557	K1559-1/2	K1524	K1525
McGraw-Edison	DF2W5	DF2W7	DF2W10	DF2W15	DF1W2	DF1W3
Power Line						
Hardware	SWF225A	SWF33B	SWF44A	-	-	-
Utilities						
Service	5485	5487A	5488	5490A	5478	5479

CURVED CAST

Size, inches:	2-1/4x2-1/4	3 x 3	3 x 4	4 x 4
Thickness, in.:	1/4	5/16	7/16	1/2
Hole Diam., in.:	11/16	11/16	15/16	13/16

American Connector (A)		CW 33-5	CW 34-7	CW 44-6
Barron Bethea (N)	GCW-1A	GCW-31	CRW-4A	GCW-41
Bethea Metals (A)	AWC-22-5	AWC-33-5	AWC-34-7	AWC-44-6
Reliable/Bethea (A)	-	WC-33-5	WC-34-7	WC-44-6
Continental (N)	-	CW-33-5	CW-34-7	CW-44-6
Flagg (MIF)(M)	P141	P143	P120	P144
Power Line Hardware (M)		CSW-33	CRW-34	CSW-44
Universal Electric (A)	UW-225	UW-335	UW-347	UW-446

CURVED ROLLED STEEL

Joslyn (Steel) J114

FLAT CAST

Barron Bethea (N)	BB-214
Flagg (MIF) (N)	P56A

SPURRED

3" Round, 3/16" Thick, 13/16" Hole

Continental (N)	TCSF-30-6
Flagg (MIF) (M)	PX159A

(A) Aluminum Alloy
(M) Malleable Iron
(N) Nodular Iron

1 - Clamp, deadend

DISTRIBUTION

Copper 2 through 6 CWC 4A through 8A		ACSR (Aluminum Clamps)			
		4/0 & 3/0	2/0	1/0	2 & 4
-	ALCOA	302	302	302	302
-	American Connector Engineering	QDA-63	QDA-53	QDA-53	QDA-53
MD-52-N	Anderson/Sq.D	PG57N	PG57	PG-46N	PG-46N
-	Reliable/Bethea	DA-20N	DA-15-N	DA-15-N	DA-15-N
-	Bethea Metals		ADQ-53	ADQ-53	ADQ-53
-	Continental	AQD-63	AQD-52	AQD-52	AQD-52
-	C & R	CR-20-90	CR-10-90	CR-10-90	CR-10-90
2111	Joslyn	BT5210	J25392	J25389	J25389
-	Lapp	306120N	306118N	306118N	306118N

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1 - Deadend for Steel Strand (Overhead Ground Wire)

TRANSMISSION

For High Strength Steel Strand and Aluminum-Clad Steel Strand

Clamp Type

<u>High Strength Steel</u>		<u>Aluminum-Clad Steel</u>		
<u>Manufacturer</u>	<u>3/8" and 7/16"</u>	<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>
Anderson/Sq. D	SWDE-55N			
Continental	FQD-55-3-LW			
Reliable/Bethea	FD-550-N (For use on 3/8" steel strand only)			

1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

Manufacturer	Compression Type					Extra High Strength		
	High Strength Steel 3/8"	7/16"	Aluminum-clad steel 7 No. 9 AWG	7 No. 8 AWG	7 No. 7 AWG	5/16"	3/8"	7/16"
Fargo	861255	861430	861225	861227	861430	861022	861225	861430
Alcoa	4620.12	4627.14						
Burndy	YTW375E	YTW438E	YTW7M9T	YTW7M8T	YTW7M7T			
Homac	Order by wire size and type							

Formed Type*

Chance	16M-AWTLG	20M-AWTLG
Helical Line Prod.	HG210-3/8 HG211-7/16 HG523-12.5M	HG528-20M HG209-5/16 HG210-3/8 HG211-7/16

* Class B galvanizing. When overhead groundwire has Class C galvanizing, formed deadend should also have Class C galvanizing.

Automatic Type

Fargo	GDE-302	GDE-303	GDE-302	GDE-303	GDE-301 GDE-302 GDE-303
Reliable	5202	5203	5202	5203	5201 5202 5203

Conditional List
1(1)
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1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
* <u>American Connector Engineering</u> Aluminum alloy deadend Catalog No. SDA 53 (#4-3/0 ACSR)	1338 (4/2/87)	(a) To obtain experience (b) Applications limited to replacements under hot line conditions.
* <u>Anderson/Square D</u> Aluminum alloy deadend Catalog No. ADS-48-N (2/0 ACSR)	1130 (1/5/78)	(a) To obtain experience (b) Applications limited to replacements under hot line conditions.
Catalog No. ADS-60-N (3/0 ACSR)	1148 (9/28/78)	
* <u>Barron Bethea</u> Aluminum alloy deadend Catalog No. SDF-10A (4 through 4/0 ACSR)	871 (7/6/67)	Same as above.
* <u>Reliable/Bethea</u> Aluminum alloy deadend Catalog No. ASO-684-2 (1/0, 2/0, 3/0 ACSR)	961 (2/18/71)	Same as above.
Catalog No. ASD-2-N (4-2/0 ACSR)	1201 (12/4/80)	Same as above.
Catalog No. ASD-34-N 3/0, 4/0 ACSR	1371 (10/6/88)	Same as above.
* <u>Burndy</u> Aluminum alloy deadend Catalog No. CUW26RE-1 #2-2/0 Str. Aluminum #4-2/0 ACSR	1255 (3/24/83)	Same as above.
* <u>Continental</u> Aluminum Alloy deadend Catalog No. HDSO-57 (with side opening) (4-4/0 ACSR)	1244 (10/7/82)	Same as above.
Catalog No. SGA-52-23 (4-2/0 ACSR)		
Catalog No. SGA-60 (3/0-4/0 ACSR)		

*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*C & R Products</u>		
Catalog No. CRDE-10-180	918 (5/15/69)	(a) To obtain experience.
(No. 4 thru No. 2/O ACSR)	1331 (11/20/86)	(b) Applications limited
Catalog No. CRDE-20-180		to replacements under
(No. 3/O and No. 4/O ACSR)		hot line conditions.
<u>*Bethea Metals</u>	1346 (7/30/87)	(a) To obtain experience.
Aluminum Alloy		(b) Applications limited
straight line		to replacements under
deadend clamp		hot line conditions.
Catalog No. ASC-47		
<u>*Fargo</u>		
Aluminum alloy deadend	1258 (5/5/83)	Same as above.
Catalog No. GD-961A		
side opening keeper	1144 (8/3/78)	
(No. 4 and No. 2 ACSR)		
Catalog No. GD-972A	791 (4/30/64)	
(2/O, 3/O, 4/O ACSR)		

*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

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m - Clamp, suspension

2 BOLT - DISTRIBUTION

	<u>Copper & CWC</u>	<u>ACSR with 4</u>	<u>Straight or 2</u>	<u>Formed 1/0 & 2/0</u>	<u>Armor Rods 3/0 & 4/0</u>
American Connector	FLS-53	ALS-62	ALS-62	ALS-86	ALS-105
Anderson/Square D	MS-46-N	MS-60-N	MS-70-N	HAS-85-N	HAS-104-N
Barron Bethea	FWG-1	FWG-2	FWG-3	FWG-4	-
Reliable/Bethea	FS-46-N	GW-1-N	LS-0-N	LS-1-N	LS-2-N
ABB	6240	6241	6242	6243	6244
C & R Products	-	-	-	CRSC-1	CRSC-2
Continental Electric	FSC-46-N	FSC-60-N	SC-70-N	SC-85-N	SC-105-N
Dulmison	-	-	-	-	AGS*
Joslyn (Brewer Titchener)	6240	6241	6242	6243	6244
Lapp	305740N	306027N	306028N	306029N	306030N
Preformed	-	-	-	-	AGS*

*Accepted for larger sizes.

m - Clamp, Suspension

ANGLE - DISTRIBUTION
No. 2 & 4 ACSR
Plus Rods

2-BOLT TRANSMISSION
For 3/8" Steel Overhead
Ground Wire

-	American Connector	FLS-53
AAC-68-90	Anderson/Square D	MS-46-N
-	Barron Bethea	FGW-1
RALS-1	Reliable/Bethea	FS-46-N
AC-75	Continental	FSC-46N
GD-907A	Fargo	-
2300	ABB	6240
2300	Joslyn (Brewer-Titchener)	6240
306092	Lapp	305740N
AC-60	Power Line Hardware	-

ⁿ
July 1988

n - Bolt, double arming

Applicable Specification: ANSI C 135.1, "Standards for Galvanized Steel Bolts and Nuts."

Applicable Sizes : 5/8 inch diameter, 12 inch through 24 inch length

3/4 inch diameter, 20 inch through 24 inch length

The following manufacturers have shown compliance with the applicable specifications for double arming bolts:

A. B. Chance Company
Dixie Electrical Manufacturing Company
Florida Wire and Cable Supply Division
Hughes Brothers
*Joslyn Manufacturing and Supply Company
Kortick Manufacturing Company
*McGraw-Edison
Portland Bolt & Manufacturing Company
Power Line Hardware
Steel City Bolt & Screw Co., Inc.
Utilities Service Company



*"Static proof" designs available.

o - Bolt, eye, oval

Applicable Specification: ANSI C135.4, "Standards for Galvanized ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch diameter, 6 inch through 20 inch length

3/4 inch diameter, 8 inch through 20 inch length

The following manufacturers have shown compliance with the applicable specifications for oval eye bolts:

Berny's Forging Company
A. B. Chance Company
Dixie Electrical Manufacturing Company
*Joslyn Manufacturing Company
Kortick Manufacturing Company
*McGraw-Edison
Power Line Hardware
Utilities Service Company

*"Static proof" designs available.



Shoulder Eye Bolt
for Transmission Structures

3/4 inch diameter, 8 inch through 20 inch length

Catalog Number

Joslyn
Kortick

J9528 to J9540
K9558 to K2570

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p - Connectors, Distribution (Parallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

	ACSR to ACSR To same size or smaller Bare Conductor				
	4/0 - 2/0	1/0	2	4	
Alcoa	190	396.6	490.0	490.0	
Anderson/Sq. D	LC-53A	LC-51C	LC-51A	LC-51A	
Reliable/Bethea	APG-3	APG-2	APG-1	APG-1	
Blackburn	PAE 4141-9	PAE 2121-9	PAE 2121-9	PAE 2121-9	
Burndy	KVS28A	UCG25R	UC25R2R	UC25R2R	
Electrical Specialty Products, Inc.	PG-53A	PG-51C	PG-51C	PG-51C	
Fargo	GA-614	GA-620	GA-620	GA-620	
Joslyn	6053	6052	6052	6052	
Penn-Union	PCAA-20BF	PCAA-15BF	PCAA-10BF	PCAA-10BF	
	Over Armor Rods				
	3/0	2/0	1/0	2	4
Alcoa	200	R196	R196	R196	198
Anderson/Sq. D	LC-83A	LC-52C	LC-52C	LC-52C	LC-52C
Blackburn	-	-	PAA10	PAA10	PAA10
Burndy	-	-	UC32R	UC32R	UC32R
Electrical Specialty Products, Inc.	-	-	PG-52C	PG-52C	PG-52C
Fargo	GA-9843	GA-9842	GA-616	GA-616	GA-616
Joslyn	-	-	744AL	600AL	600AL
Penn-Union	-	-	ARC-12	ARC-11	ARC-14
Reliable	-	-	744AL	600AL	600AL

p - Connectors, Distribution (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to Copper or Copperweld-Copper

ACSR Size (Bare Conductor)

	3/0	2/0	1/0	2	4
Alcoa	197	R193	R193	195	195
Anderson/Sq. D	LC-811A	LC-811A	LC-522A	LC-511A	LC-511
Blackburn	PAC7	PAC7	PAC4	2CA	4CA
Fargo	GA-616C	GA-616C	GA-620C	GA-620C	GA-620C
Joslyn	600ALC	555ALC	438ALC	438ALC	438ALC
Reliable	600ALC	555ALC	438ALC	438ALC	438ALC

ACSR Size (Over Armor Rods)

	3/0	2/0	1/0	2	4
Alcoa	201	R197	R197	R197	199
Anderson/Sq. D	LC-833	LC-833	LC-811A	LC-811A	LC-811
Blackburn	-	-	PAC7	PAC7	PAC7
Fargo	GA-9843C	GA-9842C	GA-616C	GA-616C	GA-616C
Joslyn	-	-	744ALC	600ALC	600ALC
Reliable	-	-	744ALC	600ALC	600ALC

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p - Connector, Distribution

Applicable Specification: "REA Specification for Connectors," DT-8

Copper Type Conductors
Connections to same size or smaller

C'Weld Copper Copper	2A 0x7	2x3	4A	6A 4	8A 6
	<u>Bare Conductor</u>				
Anderson/Sq. D	DG-1/0	DG-1	DG-2	DG-4	DG-6
(s) Burndy	KS-25	KS-23	KS-23	KS-20	KS-17
(s) Dossert	DS-10-F	DS-6-F	DS-6-F	DS-3-F	DS-2-F
Fargo	GC-5020	GC-5002S	GC-5002	GC-5004	GC-5006
(s) Frankel	B-1/0	B-2	B-3	B-4	B-6
(s) Greaves	-	A-8	-	A-5	A-3
(s) ILSCO	IK-1/0	IK-2	IK-2	IK-4	IK-6
(s) Joslyn	-	IF	2F	4F	6F
(s) Kearney	118109	118109	118108	118104	118102
(s) Krueger & Hudepohl	UC58C-EV	-	-	-	-
(s) Penn-Union	S1/0	S2	S3	S4	S6
(s) Reliable	-	1F	2F	4F	6F
Royal Switchgear	1739	1739	-	-	-

Over Armor Rods

Anderson/Sq. D	K-5	K-4	K-4	K-2	K-2
Burndy	KVS-31	KVS-31	KVS28	KVS26	KVS26
Fargo	GC-5035	GC-5035	GC-5040	GC-5020S	GC5020
ILSCO	IKB-350	IKB-350	IKB-4/0	-	-
(s) Kearney	118112	118112	118111	118110	118110
Penn-Union	VT-4	VT-3	VT-3	VT-2	VT-1
Weaver	350CX	350CX	4/0CX	2/0CX	1/0CX

(s) designates split bolt connectors

Long Connectors (Split Bolt)

Copper to Copper

	<u>2</u>	<u>4</u>	<u>6</u>
Anderson/Sq. D	C-2-L	C-4-L	C-6-L
Burndy	KS-22-3	KS-20-3	KS-17-3
Dossert	DS5-3	DS3-3	DS2-3
Greaves	A-9	A-6	A-4
Joslyn	-	4-F	6-F
Kearney	118107	118105	118103
Penn-Union	SEL-3	SEL-4	SEL-6
Reliable	-	4F	6F

p - Connectors, Service (Parallel Groove)

Applicable Specification, "REA Specification for Connectors,"DT-8

Aluminum-to-Aluminum

Solid or Stranded

	<u>No. 2</u>	<u>No. 4</u>
Alcoa	490.0	490.0
Anderson/Sq. D	LC-51A	LC-51A
Reliable/Bethea	APG-1	APG-1
Blackburn	PAE 2121-9	PAE 2121-9
Burndy	UC25R2R	UC25R2R
Electrical Specialty Products, Inc.	PG-51C	PG-51C
Fargo	GA-620	GA-620
Joslyn	AL24KK	AL46KK
Penn-Union	PCAA-10BF	PCAA-10BF

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p - Connectors, Service (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

Aluminum-to-Copper

Solid or Stranded

	2 Al to 4 Cu R193	4 Al to 6 Cu 195
Alcoa		
Anderson/Sq. D	LC-511A	LC-511A
Blackburn	PAC345	PAC345
Fargo	GA-620C	GA-620C
Joslyn	AL24UU	AL46UU

p - Connectors, Service

Applicable Specification, "REA Specfication for Connectors," DT-8

Copper-to-Copper

Solid or Stranded

<u>Manufacturer</u>	<u>No. 4</u>	<u>No. 6</u>
Anderson/Sq. D	4E	6ES
Blackburn	4N	6N
Burndy	KP4C	KP6C
Dante	SE-3	SE-2
Dossert	ES-4	ES-6
Fargo	GC-5004	GC-5006
IlSCO	SX-4	SX-6
Joslyn	R46	R68
Penn-Union	SX4	SX6

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p - Connectors, Guy Bond (Parallel Groove)

Applicable Specification: "REA Specification for Connectors,"DT-8

ACSR to Guy Strand

	<u>2/0</u>	<u>1/0</u>	<u>2 & 4</u>
Alcoa	396.6	396.6	490.0
Anderson/Sq. D	LC-52A-GP	LC-51C-GP	LC-51A-GP
Blackburn	PAE 2121-9	PAE 2121-9	PAE 2121-9
Burndy	UC 28R	UCG25R	UCG25R
Dossert	AC103-LW	AC101-LW	AC100-LW
Electrical Specialty Products, Inc	PG-52A-GP	PG-51C-GP	PG-51C-GP
Fargo	GA-616	GA-620	GA-620
Joslyn	744AL	555AL	438AL
Penn-Union	ALC-15	ALC-10	PCA-010
Reliable	744AL	555AL	438AL

Copper to Guy Strand

Anderson/Sq. D	LC-511A
Blackburn	PAC7
Burndy	UC8W26L
C & R	CRJC-1
Dossert	UDV 13-1-P
Fargo	GC-8040P
ILSCO	SK-3 (1/4")
	SK-1/0 (3/8")
Joslyn	J8300
Kearney	9968-1
Krueger & Hudepohl	UC58B-EV
Penn-Union	JC-1-AC
	(1/4", 3/8" guy strand)
	(1/0 strand copper max.)
Reliable	438ALC

p - Connectors, Compression

DISTRIBUTION

	<u>Aluminum to aluminum</u>	<u>Aluminum to copper</u>	<u>Copper to copper</u>	<u>Tap Connections (Al to Al, Al to Cu)</u>
Anderson/Sq. D	AC Series	AC Series	VCUC	VCP
Blackburn			Type CF	
Burndy	"Hycrimp"	"Hycrimp"	Crimpit"	"Cabelok Crimpit"
Electrical Specialty	"Squeeze Conn" (Type S)	Squeeze Conn" (Type S)	-	-
Homac	H Tap-OB&DB	H Tap-OB&DB	-	H Tap-OB&DB
Kearney	"Squeezeon" (Aluminum)	"Squeezeon" "Aluminum"	"Squeezeon" (Copper)	"Squeezeon" (Aluminum)
Penn-Union	"Press-On" (Aluminum)	"Press-On" (Aluminum)	"Press-On" (Copper)	"Penn-L-Tap"

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p - Connectors, Compression

SERVICE

	<u>Aluminum-to-Aluminum</u> <u>Aluminum-to-Copper</u>	<u>Copper-to-Copper</u>
Alcoa	"SECS"	-
Anderson/Sq. D	VAUS	VCCS
Blackburn	CS, KL	-
Burndy	"Linkits"	YDS-C, YDS-W
Electrical Specialty	VSE	-
Homac	"Shure Splicers"	-
Kearney	"Serv-ens"	-
National Tel. Supply	"Nicopress"	-
Penn-Union	"Penn Sleeves"	-

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.

u - Deadend for alumoweld guy strand

Strand Size	3#10(4M)	7#12(6M)	7#11(8M)	7#10(10M)	7X.110"(11.5M)	7#9(12.5M)	7X.121"(14M)	7#8(16M)	7X.148"(20M)
-------------	----------	----------	----------	-----------	----------------	------------	--------------	----------	--------------

Formed Type
Alumoweld Guy Strand

Chance
For standard guy

Helical
Line Products
For standard guy

Pre-formed Line
Products
For standard guy
for wrapped guy

6M-AWTLG	8M-AWTLG	10M-AWTLG	12.5M-AWTLG
----------	----------	-----------	-------------

HG517-6M	HG519-8M	HG521-10M
----------	----------	-----------

AWDE-4108	AWDE-4110	AWDE-4113	AWDE-4116	AWDE-4118	AWDE-4119	AWDE-4120	AWDE-4122	AWDE-4126
WGL-4110	WGL-4110	WGL-4113	WGL-4116	WGL-4116	WGL-4120			

HG523-12.5M	HG524-14M	HG525-16M	HG528-20M
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Automatic
Alumoweld Guy Strand

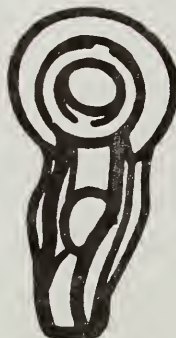
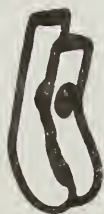
Fargo
Reliable

GDE-300	GDE-301	GDE-301	GDE-302
5200	5201	5201	5202

v-1
January 1989

v - Guy Attachment
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Guy Hook</u>
Maximum Working Load Rating	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	23,130 N (5200 lbs.)	37,800 N (8500 lbs.)
Anderson Elec./ Square D	-	-	-	-
Barron Bethea	-	-	-	GH-5
Bethea Metals	-	-	-	AGA56 AGA-56X
Reliable/Bethea	-	-	-	AG-5
Chance	5004	0100	C203	C203-0168
Continental Electric	-	-	GAD	GAD-56-4
Dixie	D5004	D0100	DD-9460	DD-9462
Flagg (MIF)	-	-	P151A,	P151X
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	-	HGA-58C
Universal Electric	-	-	-	UGA-56C
Util. Service	31030	5531	-	-



*This hook may be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

Pole Eye Plates
(5/8" Bolt)

<u>Type</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	<u>37,800 N. (8500 lbs.)</u>
Anderson Elec./ Square D	GSP-05
Bethea Metals	FPE5-6
Reliable/Bethea	PE5-6A
Continental Electric	PEP-66-45
Flagg (MIF)	PX88
Power Line Hardware	PGA-548

Conditional List
v
July 1988

v - Guy attachment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Joslyn Pole Band, with cone head bolt, J-6281 and guy clip J-6275 J-6280 (for 6" to 10" pole) J-6270 (for 8" to 14" pole)	745 8/16/62	To obtain experience. For distribution lines only and 10,000 lbs maximum loading.

w - Insulators, guy strain
(Fiber Reinforced Plastic)

Ult. Strength, pounds	11,000	15,000	21,000
<u>Barron Bethea</u>	BB-11-CC Series	BB-15-CC Series	BB-21-CC Series
<u>Reliable/Bethea</u>	FGS16 Series	FGS16 Series	FGS21 Series
<u>Continental</u>	G-11 Series	G-15 Series	G-21 Series
<u>Flagg (MIF)</u>	150 Series	150 Series	210 Series
<u>Hughes Brothers</u>	-	992 Series	994 Series
<u>Joslyn-Empire</u>	400 Series	500 Series	650 Series
<u>McGraw-Edison</u>	-	DEG 15 Series	DEG 30 Series
<u>Tranpol</u>	HSI1-1P Series	HSI-2X Series	HSI3-1P Series

x
July 1988

x - Rod, anchor

Applicable Specification: ANSI C135.2, "Standards for
Galvanized Ferrous Strand
Eye Anchor Rods."

Applicable Sizes: Single guy - 5/8 inch diam. 6, 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

Double guy - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

Single Guy Drive - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

Double Guy Drive - 5/8 inch diam. 7 and 8 feet long
- 3/4 inch diam. 8, 9 and 10 feet long
- 1 inch diam. 9 and 10 feet long

The following manufacturers have shown compliance with the applicable specifications. Some manufacturers cannot supply all sizes listed above. Check with manufacturer or distributor for availability.

Carolina Galvanizing
Chance
Dixie
Grip-Tite
Joslyn

Knight
Kortick
McGraw-Edison
Utilities Service



y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

DISTRIBUTION GUY STRAND

Grade Size	Siemens Martin			High Strength (HS)				Extra High Strength (EHS)				
	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"
Manufacturer												
Alcan Cable	X	X	X	X	X		X	X	X			X
Armco Steel Corp.				X		X	X	X	X		X	X
Bekeart Steel Wire Corp.	X	X	X	X	X	X	X	X	X		X	X
Bethlehem Steel	X	X	X	X		X	X	X	X		X	X
CF & I	X	X	X	X		X	X	X	X		X	X
Cal-Wire	X	X	X	X	X	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X	X	X	X	X
National Strand Products	X	X	X	X	X	X	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X	X	X			X	X	X			X
Seal Wire Co.	X	X	X	X			X	X	X			X
Southwire	X	X	X	X	X	X	X	X	X	X	X	X
Texstrand		X		X					X		X	

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade Size	High Strength (HS)			Extra High Strength (EHS)						
	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
<u>Manufacturer</u>										
Alcan Cable	X			X	X				X	X
Armco Steel Corp.	X		X	X	X			X	X	X
Bekeart Steel Wire Corp.	X		X	X	X			X	X	X
Bethlehem Steel	X			X	X			X	X	X
CF & I	X		X	X	X			X	X	X
Cal-Wire	X	X	X	X	X		X	X	X	X
Davis Walker	X	X	X	X	X		X	X	X	X
Florida Wire and Cable	X	X	X	X	X		X	X	X	X
Indiana Steel and Wire	X	X	X	X	X		X	X	X	X
National Strand Products	X	X	X	X	X		X	X	X	X
Paulsen Wire Rope Corp.	X			X	X				X	X
Seal Wire Co.	X			X	X				X	X
Southwire	X	X	X	X	X		X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A363 (Class A, B or C Coating)

OVERHEAD STATIC WIRE

Grade Size	High Strength (HS) 3/8"	High Strength (HS) 7/16"	Extra High Strength (EHS) 5/16"	Extra High Strength (EHS) 3/8"	Extra High Strength (EHS) 7/16"
<u>Manufacturer</u>					
Alcan Cable	X	X		X	X
Armco Steel Corp.	X	X	X	X	X
Bekeart Steel Wire Corp.	X	X	X	X	X
Bethlehem Steel	X	X	X	X	X
CF & I	X	X	X	X	X
Cal-Wire	X	X	X	X	X
Davis-Walker	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X
National Strand Products	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X		X	X
Seal Wire Co.	X	X		X	X
Southwire	X	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A363.

Conditional List

y
July 1988

y - Al-Zn Alloy Coated Steel Wire
Applicable Specification: ASTM A785 (Classes 30 & 45)
Condition of Acceptance - To obtain experience

Distribution Guy Strand

Grade	Siemens Martin	High Strength					Extra High Strength				
Size	1/4" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"					

Bethlehem Steel	X	X	X	X	X	X	X	X	X	X
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Transmission Guy Strand

Grade	High Strength					Extra High Strength				
Size	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"	1/4" 9/32" 5/16" 3/8" 7/16"					

Bethlehem Steel	X	X	X	X	X	X	X	X
-----------------	---	---	---	---	---	---	---	---

(Purchaser should specify class 30 or class 45)

y - Aluminum Coated Steel Wire
Applicable Specification ASTM A474

National Strand Products, 3/8"

Distribution Guy Strand

Siemens-Martin	1362	To obtain experience.
High-Strength	5/12/88	
Extra High Strength		

Transmission Guy Strand

High-Strength	1362	To obtain experience.
Extra High Strength	5/12/88	

Overhead Static Wire

High-Strength	1362	1. To obtain experience.
Extra High-Strength	5/12/88	2. Must meet the joint requirements of ASTM A363.

July 1988

z - Anchors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Screw anchors, power installed	1252	To obtain experience.
	2/3/83	
24462 (6,000 and 8,000 lb.)		
12332P 5/8" rod		
12587 5/8" thimbleye		
24484 (10,000 and 12,000 lb. anchor helix)		
12632P (3/4" rod)		
6512 (thimbleye nut)		
<u>Dixie</u>		
Screw anchors, power-	859	To obtain experience.
installed	2/9/67	
D-1162-G (6,000 &		
8,000 lb., 5/8" rod)		
D-1375-G (10,000 &		
12,000 lb., 3/4" rod)		
<u>Joslyn</u>		
Screw anchors, power-	973	To obtain experience.
installed	8/19/71	
J11B-CA (6,000 & 8,000		
lb., 5/8" rod)		
J13C-CA (10,000 & 12,000		
lb., 3/4" rod)		
<u>McGraw-Edison</u>		
Screw anchors, power-	992	To obtain experience.
installed	5/25/72	
DA11G621 (6,000 & 8,000		
lb., 5/8" rod)		
<u>Foresight</u>		
MR-1	1360	1. To obtain experience.
	3/31/88	2. Each installation must
		be proof tested.
		Maximum rating is test
		value achieved.

NOTES: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

Catalog numbers shown are for anchors with 1-3/8" hubs. Equivalent anchors with 1-1/2" hubs are also acceptable. (A special installing wrench is required.)

aa, ab
January 1989

aa - Nut, eye
ab - Nut, thimble eye
5/8 inch

Eye Nut
Conventional



Eye Nut
Eyelet



Thimble
Eye Nut



American Connector Engineering	EN-5		
Barron Bethea	OEN-2A	B-14A	EN4A
Berny's Forging Co.	OE1	-	-
Reliable/Bethea	E-5	B-5	NT-5
Chance	6502	-	6510
Continental Electric	EN-5	BE-5	TN-5
Dixie	D6502	DD-6517	D6510
Flagg (MIF)	P125C	P127A	P128A
Hughes	EN60	-	-
Joslyn	J1092	J1126	J6510
Kortick	K4212	K4413	K3111
McGraw-Edison	DG2E3	DG6E1	DG1E1
Power Line Hardware	OEN-58	BEL-58	-
Utilities Service	450	497	C580

ah - Tie, insulator, formed type

Manufacturer

Type

Chance

Tygard Type AWTY-56* (Side tie for use over armor rod on spool insulator with 1-3/4" groove)

Super Top-Tie, Type STT for single or double support use, with insulators 2-1/4" through 3-1/2" neck diameter and single support use on spool insulators with 1-3/4" groove diameter (Order for specific conductor size.)

Preformed Line Products

WT "Wraplock"
(Order for specific conductor size and insulator)

ST "Groove-Formed"
side tie (Order for specific conductor size and insulator)

Spool Tie for ACSR, Type SPL* (Side tie for use on spool insulator with 1-3/4" groove)

DST double support top tie
(Order for specific conductor size and insulator)

DBST double side tie
(Order for specific conductor size and insulator)

*Not for side mounting on pin or post insulators.

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Copper-covered steel rods

	<u>5/8"</u>
Apache	GR588
Boggs	EB810
Calpico	CP588
Carolina Galvanizing	P-588
Erico	E858
Blackburn	6258
Joslyn	J8338
Kortick	K5428
Knight	858
Power Line Hardware	GR-588C
Utilities Service	6617
Wilcor	WA588C

Stainless Clad Steel

<u>Manufacturer</u>	<u>5/8"</u>	<u>3/4"</u>
Teledyne (MEFCO)	"PERMAGROUND"	"PERMAGROUND"

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Hot Dip Galvanized Steel

<u>Manufacturer</u>	<u>5/8"</u>	<u>3/4"</u>
Blackburn	GR6258	GR7508
Boggs	G588	G348
	PTG588**	PTG348**
Carolina Galvanizing	G588	G348
	G-588PT**	G-348PT**
Chance	8578	8618
	C203-0107**	C203-0109**
	C203-0377*	
Dixie	D8578	D8618
Erico	G588	G348
	G588PT**	G348PT**
Galvan	GR6258	GR7508
General Electric	0982-00002	0982-00003
Grip-Tite	GT588	GT348
	GT588PT**	GT348PT**
Joslyn	J3358B*	J3458B*
	J5328	J5338
	J5228**	J5238**
Knight	G-588	G-348
	G-588PT**	G348PT**
Kortick	K4658	K4678
Lloyd	6258H	7508H
McGraw-Edison	DN5S8	DN6S8
	DN6D8*	
National Utility Products	UR1016-8	UR1216-8
Porcelain Products	7338	7348
Power Line Hardware	GR-588G	GR-348G
Utilities Service	5307	6338
Wilcor	WA8580G	WA8340G

Electro-Galvanized Steel

Apache	G588**	G348*
	G588PT**	G348PT**
Calpico	G8580	-
LMP	6258E**	7508E**

Stainless Steel

Teledyne (MEFCO)	TDY Sol	TDY Sol
Wilcor	WA 588-S	WA348-S

*Rod furnished with clamp.

**Rod furnished with 4 ft., No. 6 tinned or galvanized copper pigtail.

ai - Rods, ground, sectional

Galvanized steel and
copper-covered steel

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Sectional Ground Rods

<u>Manufacturer</u>	<u>8' long</u>	<u>10' long</u>	<u>Coupling</u>	<u>Driving studs</u>
Blackburn	6258S	6260S	60C	60DS
Carolina Galv.	S-588 GSD-588 GSD-348	S-5810 GSD-5810 GSD-3410	CR58 CG250 CG250	DSH58 DSH58 DSH58
Chance Galv. Steel	C203-0052	8512	8611	-
Demark	-	-	GRC 58G	-
Erico	ES858	ES1058	CR58	DSH58
Joslyn Galv. Steel	J9158 J23282.8	J9160 J23282.10	J9182 J23282A	J9186 J9186
Knight	S858 GSD858 GSD834	S1058 GSD1058 GSD1034	SC58 KG250 KG260	DS58 DS58 DS34
Kortick	K5441	K5443	K5482	K5492
McGraw-Edsion Galv. Steel	DN17S8	DN16S10	DN1K2	-
Power Line Hardware	GR-588CS	GR-5810CS	CBC-58	DS-58
UTM	-	-	910-030-05	-

aj - Clamp, Ground Rod

<u>Manufacturer</u>	<u>For 5/8"</u> <u>Copper-</u> <u>Covered Rod</u>	<u>For 3/4" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u>	<u>For 5/8" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u>
AMP	Copper AMPACT (Order by Description)	-	-
Anderson	GC-5	-	-
Blackburn	G5	-	-
Boggs	G31	-	-
Burndy	GRC58	-	-
C & R Products	CRGC-58	-	-
Carolina Galv.	CPH58	-	CPH58
Dossert	GNL62H	-	-
*Erico (Cadweld)			
1 ground wire	GR1-161G	GR1-181G	GR1-161G
2 ground wires	GT1-161G	GT1-181G	GT1-161G
Greaves/Mercury	G-580	-	-
Ilsco	GRC-58	-	-
Joslyn	J8392AB	J25985	J25932
Knight	C58	UCSS	UCSS
Kortick	K4647	-	-
Lew Electric Fittings	GRC-5/8"		
O-Z Elec. Mfg.	BGO304	-	-
Penn-Union	CEB-2	-	-
Power Line Hardware	RC-58CE	-	-
Reliable	E58	3459	3459
UTM	910-023-03	910-007-02	910-007-02
Wilcor	HGR5/8	WAU-3/4"	WAU-5/8"

*Includes disposable molds.

Conditional List

aj

July 1988

aj - Clamp, ground rod

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Burndy</u> YGHP (for 5/8" copper- covered rods)	1234 5/13/82	To obtain experience.
<u>Power Line Hardware</u> RC-34 (for 5/8" and 3/4") galvanized or stainless steel ground rods	1114 5/12/77	To obtain experience.

an - Transformers, Power
Three-Phase, Step-Down
For Distribution Substation Use

Primary Voltage-kv	KVA					MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	
<u>Central Moloney</u>															
34.4	X	X	X	X	X	X	X	X							
43.8	X	X	X	X	X	X	X	X	X						
67.0	X	X	X	X	X	X	X	X	X						
<u>Hevi-Duty</u>															
34.4	X	X	X		X	X	X	X	X	X	X				
43.8						X	X	X	X	X	X	X	X		
67.0	X	X	X		X	X	X	X	X	X	X	X			
115						X	X	X	X	X	X	X			
138							X	X	X	X	X		X		

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTI-B and Siemens Allis Type TLS load tap changers.

North American Transformer

67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
115														
138														

Transformers 5 MVA and larger also accepted as load tap changing transformers using North American type TC-525 load tap changers.

General Electric

34.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X
43.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X
67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
115														
138														

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

Kuhlman

34.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X
43.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X
67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
115														
138														

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and ILH-21 load tap changers.

an - Transformers, Power
Three-Phase, Step-Down
For Distribution Substation Use

Primary Voltage-kv	kVA				MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
<u>McGraw-Edison</u>														
34.4		X		X	X	X	X	X	X	X				
43.8		X		X	X	X	X	X	X	X				
67.0		X		X	X	X	X	X	X	X				
115											X		X	
138												X		

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B, and 550C load tap changers.

<u>ABB</u>														
34.4							X	X	X	X	X			
43.8								X	X					
67.0				X		X	X	X	X	X	X	X	X	X
115							X	X	X	X	X	X	X	X
138							X	X	X	X		X	X	X

Transformers 5 MVA also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

<u>Westinghouse</u>														
34.4		X	X	X	X	X	X	X	X				X	
43.8		X	X	X	X	X	X	X	X	X	X			
67.0	X	X	X	X	X	X	X	X	X	X	X	X	X	
115												X	X	X
138												X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A, UTT-B and UVW load tap changers.

an - Transformers, Distribution, Pole Type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Ermco</u> 7.2/12.5 and 7.62/13.2 and 14.4/24.9 kV Single-phase, single bushing with internal Tranquell Under-oil Arrester	1359 3/17/88 1362 5/12/88	To obtain Experience.
<u>General Electric</u> 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and Dual Voltage		
Single-phase, single bushing, and two bushing with internal Tranquell Under-oil Arrester	1316 3/6/86	To obtain experience.
Single-phase, single bushing and two bushing, 25 and 50 kVA pole type distribution transformers with amorphous metal cores	1320 5/8/86	To obtain experience.
Single-phase, single bushing and two bushing pole type distribution transformers with G.E. high voltage switch	1370 9/22/88	To obtain experience.
<u>Kuhlman</u> 7.2/12.5 kV and 7.62/13.2 kV Toroform design 10, 15, & 25 kVA	1370 9/22/88	To obtain experience.
<u>RTE</u> 7.2/12.5, 7.62/13.2, 14.4/24.9 kV and Dual Voltage		
Single-phase, single bushing, self-protected, with Magnex Interrupter	1358 3/3/88	To obtain experience.

Conditional List
an(1.2)
July 1988

an - Transformers, Distribution, Pole Type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>VanTran</u> 14.4/24.9 kV and Dual Voltage	1075 10/16/75	To obtain experience.
Conventional, single bushing Type CR		
Conventional, two bushing Type CD	1095 8/11/76	
Self-protected, single bushing Type CSP-R		
<u>Westinghouse</u> 7.2/12.5, 7.62/13.2	1333 12/18/86	To obtain experience.
Single-phase, single bushing, 25 and 50 kVA pole type distribution transformers with amorphous metal cores.		
14.4/24.9 kV & Dual Voltage	1354 12/31/87	To obtain experience.
Single-phase, single bushing, 25 kVA pole type distribution transformers with amorphous metal cores.		

an - Transformers, Power
Single-Phase, Step-Down
For Distribution Substation Use

Condition of Acceptance: To obtain experience.

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

"S" indicates that performance specifications have been furnished REA and test data are to be submitted when available.

Primary Voltage-kV	167	250	333	500	833	1250	1667	2500	3333	5000	6667	8333	10,000
kVA Capacity													
ABB													
67.0													
ESCO													
34.4	X			X	X								
General Electric													
43.8	S									S			
115												S	S
Hevi-Duty													
34.4									S			S	S
43.8										S	S	S	S
67.0										S	S	S	S
115										S	S	S	S
H. K. Porter (Delta-Star)													
34.4	S	S	S	S	X	X	S						
43.8					S	S	S	X					
67.0					S	X	S	X	X	S	S	S	S
115							S	S	S	S	S	S	S
Kuhlman													
34.4		S											
McGraw-Edison													
34.4								S	S	S	S	S	S
43.8	S	S	S					S	S	S	S	S	S
67.0	S	S						S	S	S	S	S	S
RIE													
34.4				S	X	X							

an - Transformers, Power
 Single-Phase, Step-Down
 for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA Capacity					
	167	250	333	500	1250	1667
					2500	3333
					5000	6667
					8333	10,000
Westinghouse						
54.4						
45.8						
67.0						

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	KVA				MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30

ABB

115
138

S

Transformers 5 MVA and larger also accepted as load tap changing transformers using ASEA Electric
Type UZD load tap changers.

Central Moloney

34.4

S

Transformers 5 MVA and larger also accepted as load tap changing transformers using North American
Type 1C-525 load tap changers.

terrantti-Packard

34.4

S

X

S

S

S

S

S

S

S

General Electric

34.4

43.8

115

138

S

S

S

S

S

S

S

S

S

S

S

S

S

S

S

S

S

S

S

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric
Types LR72, LR65 and LRT-200 load tap changers.

Hevi-Duty

34.4

43.8

67.0

115

138

S

S

S

S

S

S

S

S

S

S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse
Types UTS-A and UTT-B and Siemens Allis Type TLS load tap changers.

Condition of Acceptance: To obtain experience.

Transformers 5 MVA and larger also accepted as load tap changing transformers using Seimens-Allis Types TLS and TLH-21 load tap changers.

34.4	S	S	S
43.8	S	S	S
67.0	S	S	S

4.4	S	X	S
43.8	X	X	S
67.0	S	S	X

34.4

34.4	S	S	S	S	S	X	X
43.8	S	S	S	S	S	X	X

[illegible]

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A, UTI-B and UVW load tap changers.

bh
July 1988

bh - Clevis, Service Deadend

Applicable Specification: "REA Specification for Service Deadend
Clevises," D-8

<u>Manufacturer</u>	<u>Clevis Only*</u>	<u>Clevis with dry process spool</u>	<u>Clevis with wet process spool</u>
Chance	0341	0341-0606	0341-C909-1931
Dixie	D0341	D0341-D	D0341-W
Joslyn	J0313	J0314	-
Kortick	K9250	K9100	K9099
McGraw-Edison	DC3F1	-	-
Utilities Service	32136	31136	36136

*Catalog number does not include spool; for spool see Page cm.

bi
January 1989

bi - Gain, Pole

For use with rectangular crossarms

Chance	4092
Continental	CAG-44-5
Flagg (MIF)	PX252
Joslyn	J4092

For braceless crossarms (narrow profile construction)

Reliable/Bethea	GCAF-6A
Continental	DEA-65-10A
Flagg (MIF)	PX182A

Transmission

Grid Gains

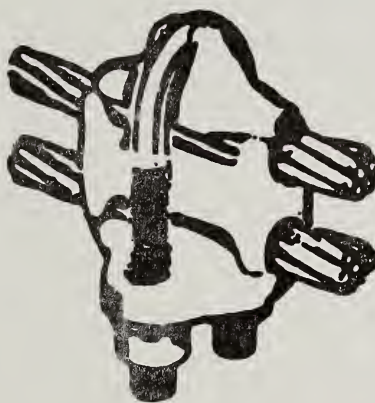
	<u>Sizes in inches</u>	
	<u>4" x 4"</u>	<u>4" x 9"</u>
Barron Bethea	PG-44	PG-945
Reliable/Bethea	GSF-44-7	GSFT-95-7
Continental	GGSF-4040-7	GRF-9045-7
Flagg (MIF)	PX122	PX260
Hughes Brothers	1263	1260
Joslyn	J6064	J22533-A

bn
January 1989

bn - clamp, loop deadend

For ACSR

	3/0	2/0	1/0	2	4
ALCOA	-	413	413	412	411
Anderson/Sq. D	LC-74B	LC-71B	LC-70B1	LC-70B	LC-70B
Reliable/Bethea	ALD-7373-U	ALD-34-U	ALD-1313-U	ALD-1313-U	ALD-1313-U
Blackburn	DLC23	DLC2106	DLC2106	DLC2106	DLC2106
Burndy	-	-	UW25R	UW2R	UW2R
C & R	-	-	CRLD-10	CRLD-10	CRLD-10
Electrical Specialty Products	LD-4	LD-2	LD-1	LD-1	LD-1
Fargo	GA-145	GA-145	GA-144	GA-144	GA-144



bo
January 1989

bo - Shackle, anchor

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson/Sq. D	AS-25
Reliable/Bethea	ASH-45
Chance	5801
Continental	AS-25-5-4
Dixie	D5801
Flagg	12300
Joslyn	J2742
Kortick	K4481
Lapp	33852
Lindsey	3260
McGraw-Edison	DC7J1
Power Line Hardware	AS-1
Sur-Loc, Inc.	5500
Utilities Service	4106

br
January 1989

br - Chain Link (End Link)

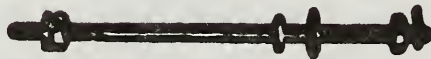
<u>Manufacturer</u>	<u>Catalog Number</u>
Reliable/Bethea	CL-5
Continental	L-5
Joslyn (Brewer-Titchener)	BT-3082-HT
Lapp	6415-HT
Lindsey	3403

bs
July 1988

bs - Bolt, single upset

Applicable Specifications: "REA Specifications for Single and Double Upset Spool Bolts," D-5

Diameter, inches	5/8	5/8	5/8	5/8
Length, inches	7	8	9	10
Chance		7741	7741-1/2	7742
Dixie	D7740	D7741	D7741-1/2	D7742
Joslyn	-	J2342-1/2	J2343-1/2	J2344-1/2
Kortick	K4929	K4950	K4930	K4951
McGraw-Edison*		DC2E3	DC2E4	DC2E5
Utilities Service	3105-1/2	31053	31053A	31054



*"Static proof" designs available.

bt
July 1988

bt - Wireholder, clevis type
with No. 24 wood screw

(For use with triplex type service cable, Drawing K10C-A)

Chance	0192*
Dixie	D075*
Joslyn	J075*
McGraw-Edison	DW5R1*

*Catalog number does not include insulator. Use secondary type spool insulator with 1-3/4-inch groove diameter. See page cm.

bu
January 1989

bu - Connector, grounding
for transformer or other equipment

<u>Manufacturer</u>	<u>Copper Alloy 1</u>	<u>Plated Copper Alloy 2</u>	<u>Aluminum Alloy 3</u>
Anderson/Square D	GTCL-23A	GTCL-23A-TP	
Blackburn	TTC-4	TTC2P	
Burndy	EQC632C	EQC632C-TN	
Dossert	TGCL8-50	TGCL8-50-SN	
Fargo	GC-207	GC-207P	GA-220
Penn-Union		GSE-C1TN	
Power Line Hardware	TGL-110	TGL-110P	
Tanner		GET-1-TN	

1 - For use with copper type ground wire.

2 - For use with both copper and aluminum type ground wire.

3 - For use with aluminum type ground wire.

cg - Switch, Air, Three-Pole, Group Operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>SEECO</u> GOABS (VL) Vacuum interrupter type -161 kV	1201 (12/4/80)	To obtain experience.
<u>S & C</u> Line-rupter with SF ₆ inter- rupter. Horizontal mounted 69-230 kV Vertical mounted 69-161 kV	1202 (12/18/80)	To obtain experience.
Omni-Rupter (L) Side-break, horizontal phase-over-phase, and vertical mounting, with non-conducting crossarm type base and insulated interphase and control rods, 15 kV and 25kV	1355 (1/14/88)	To obtain experience.
	1371 (10/6/88)	" " "

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

ci
July 1988

ci - Clevis, Thimble, Side-Opening

Numbers listed will accommodate: No. 6 thru 2/0 Copper
No. 8A thru 2A Copperweld-Copper
No. 4 thru 3/0 ACSR

Joslyn (Brewer Titchener) 2401

ct
July 1988

ct - Plate, Double Arming

<u>Manufacturer</u>	<u>Transmission</u> <u>4" x 1/2" x 24"</u>	<u>4" x 1/4" x 17"</u>
Chance	5844	5819
Dixie	D5844	D5845
Joslyn	J1600	J1607
Kortick	K1454	K1465
McGraw-Edison	DP21A1	DP23A3
Power Line Hardware	-	DAP-17
Utilities Service	4117	-

cu
January 1989

cu - Brace, crossarm, wood

Span, inches	60	60
Drop, inches	<u>18</u>	<u>30</u>
Aluma-Form	6018	6030
American Crossarm & Conduit Company	320	325
Brooks	446060-180D	446060-300D
Cascadian	15018	15030
Dis-Tran	DT-60R	DT-60R
Hatheway Patterson	320-R	325-R
Hughes Brothers	2045-CC	2045-D
Joslyn	J4760	J4730
Utilities Structures Engineering Incorporated	CU-60-18	CU-60-30

Braces listed below have 26-inch hole spacing. They are to be used in place of the flat steel braces previously listed on page h.

Aluma-Form	AF626
American Crossarm & Conduit	600
Brooks	58128
Dis-Tran	DT-28
Hatheway Patterson	7026
Hughes Brothers	2023
Joslyn	J5526

Brace, crossarm, fiber reinforced plastic

Continental	CRB-28
Hughes Brothers	533
Joslyn	RP-26
Tranpol	CAB-28
Stanley Flagg	FCB26

dh - Ground, pole

(For system grounds see ground rods on page ai.)

Manufacturer

Catalog Number

Galvanized Steel Plate With Insulated
Copper Lead

(For connecting to a copper or aluminum
ground wire above ground.)

Joslyn
Power Line Hardware

J055W
PGPS-56CL8

Galvanized Steel Plate with Connector
(For connecting to a galvanized iron ground wire)

Joslyn

J055

McGraw-Edison

DN13M1

Power Line Hardware

PGPS-56C

Copper Plate

Blackburn

GP-100

Drabco

D 101

Homac

5575

Joslyn

J9196

Power Line Hardware

PGPC-56

d1
July 1988

d1 - Pipe Spacer

3/4" diameter x 1-1/2" length

<u>Manufacturer</u>	<u>Catalog Number</u>
Chance	2237
Dixie	D2031
Joslyn	J2031
McGraw-Edison	DM3P2
Utilities Service	36695

du
January 1989

du - Link, Extension

DISTRIBUTION

<u>Manufacturer</u>	<u>Catalog Number</u>
Reliable/Bethea	LCE-14
Bethea Metals	ACL-14-5
Chance	C207-0112
Continental	CEL-14
Flagg (MIF)	PA319
McGraw-Edison	DC33B6
Utilities Service	495

TRANSMISSION

(25,000 lbs. min. strength)

Reliable/Bethea Products	ASM 7209-1-BC
Joslyn	J26082

Guy Extension Link
(For "H" Structure)

<u>Manufacturer</u>	<u>One Guy Attachment</u>	<u>Two Guy Attachment</u>
Joslyn	J22421	J26025

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

Conditional List
du(1)
July 1988

du - Connecting Links

Conditions: To obtain experience in conjunction with pole bands [Item fv(1)]
Strength Rating: 25,000 lbs. ultimate loading.

<u>Manufacturer</u>	<u>Link to</u> <u>guy</u>	<u>Size</u>	<u>Meeting No.</u> <u>and Date</u>
Hughes	3154 Link to Insulators	3/8" x 2" x 9-1/2"	1172 9/20/79
Hughes	3176	3/8" x 3" x 9-1/2"	1172 9/20/79
	Link to guy		
Joslyn	J26033	3/8" x 2" x 9-1/2"	1292 1/10/85
	Link to Insulators		
Joslyn	J26034	3/8" x 3" x 9-1/2"	1292 1/10/85

ea - Insulator, post type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Victor Insulators, Inc.</u>		
2120 (12.5/7.2 kV)	932	To obtain experience.
2127 (24.9/14.4 kV)	12/4/69	
62055 (22 kV)	1189	
62056 (34.5 kV)	6/19/80	

eb
January 1989

eb - Bracket, Pole Top
For Post type Insulators

DISTRIBUTION

<u>American Connector</u> (14.4 or 7.2 kV)	PTB-58
<u>Barron Bethea</u> (14.4 or 7.2 kV)	1B-4
<u>Reliable/Bethea</u> (14.4 or 7.2 kV)	BPT-58F
<u>Continental</u> (14.4 or 7.2 kV)	PTB-55-8
<u>Flagg (MIF)</u> (14.4 or 7.2 kV)	P526
<u>Joslyn</u> (14.4 or 7.2 kV)	J23333
<u>Lapp (Line Ware)</u> (14.4 or 7.2 kV)	304043
<u>McGraw-Edison</u> (14.4 or 7.2 kV)	DC62B1
<u>Power Line Hardware</u> (14.4 or 7.2 kV)	PTIB-375A
<u>Universal Electric</u> (14.4 or 7.2 kV)	PT-8R

TRANSMISSION

Barron Bethea	1B-4
Reliable/Bethea	BPT-58HF
Continental	PTB-66H
Flagg (MIF)	P532
Lapp (Line Ware)	304044
McGraw-Edison	DP29A1

NOTE: Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

eh
January 1989

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson Elec./Square D	HB-30
Reliable/Bethea	BH-5
Continental Electric Co.	BH-30-5
Flagg	13400
Joslyn (Brewer-Titchener)	3001-HT
Lapp	7055
Lindsey	3310
Power Line Hardware	BH-30

ACSR with Straight or Formed Armor Rods

Anderson
Barron Bethea
Reliable/Bethea
Joslyn
(Brewer Titchener)
Lapp

ACSR with Straight or Formed Armor Rods

Anderson
Reliable/Bethea
C & R
Dulmison
Continental
Joselyn (Brewer Titchener)
Lapp
*Preformed

*Clevis type available.

ej - Clamps, deadend with socket eye

ACSR

		AWG 2/0 to 4/0		kcmil			
		266.8	336.4	477	556.5	795	954
<u>Iron or Steel Clamps (require armor tape or liner)</u>							
Joslyn (Brewer-Titchener)	5001	5002	5002	5003	--	--	--
<u>Aluminum Alloy Clamps (do not require armor tape or liner)</u>							
Anderson/Square D	SD-57-S	SD-70-S	SD-86-S	SD-86-S	SD-98S	--	--
Reliable/Bethea	ADE-21-S	ADE-22-S	ADE-23-S	ADE-24-S	ADE-24-S	ADE-2526-S	ADE-2526-S
C & R	CR-10-60S	CR-20-60S	CR-20-60S	--	--	--	--
Joslyn (Brewer Titchener)	5200	5201	5202	5203	--	--	--
Lapp	305757S	305758S	305759S	305760S	--	--	--

NOTE: When used with clevis-type insulators for large conductors on distribution lines, order clamp with clevis eye.

ek
July 1988

ek - Locknuts

For Bolt Diam., in.:	3/8	1/2	5/8	3/4	7/8
	<u>MF Type</u>				
Chance	3510	3511	3512	3513	3514
Dixie	D3510	D3511	D3512	D3513	--
Hughes Brothers	MF30	MF50	MF60	MF70	--
Joslyn	J8581	J8582	J8583	J8584	J8584-1/2
Kortick	K1065	K1066	K1067	K1068	--
McGraw-Edison	DF3N1	DF3N2	DF3N4	DF3N6	DF3N8
Power Line Hardware	SLN38	SLN50	SLN58	SLN34	SLN78
Utilities Service	4920	4921	4922	4923	4924

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Anderson/Sq. D Standoff bracket, COB-E-180-TGL	1180 (1/31/80)	1. To obtain experience 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected.
Reliable/Bethea Single post insulator bracket, HBF-10-9-GC	1156 (2/1/79)	Same as above.
Standoff bracket VIB3-18-GC	1213 (6/4/81) 1278 (4/12/84) 1371 (10/6/88)	
Dixie Deadend bracket assembly D21142 for 12.5/7.2 kV	1220 (10/8/81)	Same as above.
Deadend bracket assembly D21144 for 24.9/14.4 kV		
Universal Electric Single post insulator bracket, SAB-3-18-GC	1271 (12/15/83)	Same as above.
Western Power Products Single post insulator bracket, HDB-200-R, for 12.5/7.2 kV construction only.	1152 (12/7/78)	Same as above.

Conditional List
eq(2)
July 1988

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Hughes Brothers</u>		
Two-phase angle bracket 761-36-8	1032 (12/20/73)	1. To obtain experience.
Two-phase pin bracket 813-36	1294 (2/14/85)	2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator, 560-13		
Standoff insulator, 560-18		
Suspension bracket, 615-18		
Deadend arm, 540-36	1063(4/17/75)	3. Not to be used where conductor galloping may be expected.
Standoff bracket, 892-18	1089(4/29/76)	
		4. Not to be used in con- taminated atmospheres.
<u>Chance</u>		
Two-phase pin bracket C653-0638	1043(6/13/74)	Same as above
Standoff insulator C653-0621		
Deadend arm C653-1023	1049(9/5/74) 1141(6/15/78)	
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-36V	1181(2/14/80)	Same as above.
Two-phase angle bracket GPB2-568M-36E		
Standoff insulator GPB-58M-13		
Standoff insulator GPB-58M-18		
Deadend arm GDEA-58-3.0-36-2E		
Suspension bracket GPB-58M-18E		

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC
For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Reliable/Bethea</u>		
Two-phase pin bracket 6742-36P	1285 8/16/84	1. To obtain experience
Standoff insulator bracket 6745-13P	1371 10/6/88	2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator bracket 6745-18P		3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Flagg (MIF)</u>		
Two phase angle bracket 7561-336E	1201 12/4/80	Same as above.
Two phase pin bracket 7561-436		
Standoff insulator 7561-012		
Standoff insulator 7561-018		
Suspension bracket 7561-818		
Standoff bracket 7561-218		
Deadend arm 7554-636-4E	1272 1/5/84	

Conditional List
eq(2.2)
July 1988

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Two-phase pin bracket C653-0987	1049(9/5/74)	1. To obtain experience.
Standoff insulator C653-0988		2. For use only in scenic areas and locations where right-of-way is limited.
Deadend arm C653-1024	1041(6/15/78)	3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-44--V-1.375	1181(2/14/80)	Same as above.
Two-phase pin bracket GPB2-558H-48-V-1.375	1272(1/5/84)	
Standoff insulator GPB-58M-19-V-1.375		
Standoff insulator GPB-58H-20-V-1.375		
Standoff bracket GIACB-58M-18		
Deadend arm GDEA-58-3.0-48-2E		
<u>Hughes Brothers</u>		
Deadend arm, 540-48	1063 (4/17/75)	Same as above.
Standoff insulator, 880-20	1081 (1/8/76)	
Two-phase pin bracket, 883-48	1089 (4/29/76)	
Standoff insulator, 870-19	1294 (2/14/85)	
Two-phase pin bracket, 862-44		
Standoff bracket, 892-18		

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Reliable/Bethea</u>		
Standoff insulator bracket 6882-18P	1285 8/16/84	1. To obtain experience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used in contaminated atmospheres.
Standoff Insulator Bracket 6744-19P-1.375	1307 10/10/85	
Standoff insulator bracket 6748-20P-1.375	1371 10/6/88	
Two-phase pin bracket 6742-44P-1.375		
Two-phase pin bracket 6747-48P-1.375		
<u>Flagg (MIF)</u>		
Standoff insulator 7581-120X	1201 12/4/80	Same as above.
Standoff insulator 7561-118X		
Two-phase pin bracket 7561-448X	1272 1/5/84	
Standoff bracket 7561-218		
Deadend arm 7554-648-4E		

Conditional List
eq(3)
July 1988

eq - Narrow Profile Brackets and Special Arm Assemblies
(See REA Bulletin 61-12)

WOOD ARM ASSEMBLIES

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Aluma-Form</u> Arm assembly, 12.5/7.2 kV XA-3812 Arm assembly, 24.9/14.4 kV XA-4214	1038 (4/4/74)	1. To obtain exeperience. 2. For use only in scenic areas and locations where right-of-way is limited. 3. Not to be used where conductor galloping may be expected. 4. Not to be used as deadend structures.
<u>Hughes Brothers</u> Deadend arm, 2890-J complete with braces and attaching hardware, fittings and bolts	1065 (5/15/75)	1. To obtain experience. 2. For use only in scenic areas and locations right-of-way is limited. 3. Not to be used where conductor galloping may be expected.

es - Splice Cover, Plastic

(For use over compression type service connections
in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Anderson/Square D	Type SEC
Blackburn	Type C
Kearney	Type 601
3M	PST Series 8420
Plastic Engineering & Sales Co.	Wire Splice Cover
Virginia Plastics	Type VP

Splice Cover and Moisture Seal for
Secondary Cable Connections (See
Drawings G312 and UM5)

<u>Manufacturer</u>	<u>Type</u>
AMP	Sealing & Dielectric Compound
Bishop	Electro-Seal
3M	Scotch Brand #2200

Bolted Connector Cover

(For use over bolted type service connections in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Fargo	GA-9000 B Series

eu
January 1989

eu - Extension Link
(Fiberglass)
(Distribution)

<u>Manufacturer</u>	<u>Strength</u>	<u>Catalog Number</u>
Anderson/Square D	10,000 lbs. 15,000 lbs.	*GSB1-9 GSB2-12
Barron Bethea	11,000 lbs. 15,000 lbs.	*BB-11-EE-12 BB-15-EE-12
Reliable/Bethea	11,000 lbs. 15,000 lbs.	FGS16-EE-12P FGS16-EE-12P
Continental	11,000 lbs. 15,000 lbs.	*GEE11-12 GEE15-12
Flagg (MIF)	11,000 lbs. 15,000 lbs.	150-12EE 150-12EE
Joslyn-Empire	15,000 lbs.	500-12EE
Tranpol	11,000 lbs. 15,000 lbs.	*HSB-1-12 HSB-2X-12

*For use with 6" suspension insulators.

fj - Bracket, extension

(For use in mounting oil circuit reclosers or sectionalizers)

See Drawing VM3-10A

	<u>Through Bolt Type</u>	<u>Band Type</u>
Aluma-Form	TBRSM-1, TB2M1-9*	RSM-1
Dixie	D-2359-M	
Joslyn	J2357	
McGraw-Edison	DR2E3	

*For mounting double lug reclosers.

fk - Bracket, oil circuit recloser or sectionalizer

(For cluster mounting of three oil circuit reclosers on pole)

Aluma-Form	RSM-3, 6M3-9*
*McGraw-Edison	DT8C1
Turner	695-3

*Suitable for 14.4 and heavy duty 7.2 kV.

fl - Rack, primary metering

(For cluster mounting of primary metering equipment on pole)

Aluma-Form	PMM Series
Turner	3CT-PT

fm
January 1989

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
American Connector Engineering		EMB-3-18-GC	
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Reliable/ Bethea	12.5/7.2 kV 24.9/14.4 kV	VIB3-18-R1-GC-C VIB3-18-GC	
Bethea Metals	12.5/7.2 kV 24.9/14.4 kV	AVIB3-12 AVIB3-18	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613B PA619B	7510-730 7510-740-17
Hughes Brothers		892-18	670-40
Joslyn	12.5/7.2 kV 24.9/14.4 kV	J26190 J26191	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Universal Electric		SAB-3-18-GC	

For two distribution arresters in parallel or one
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B1

For Intermediate Arrester Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		WBMA-1	R3CSA-48
Reliable/Bethea	12.5/7.2 kV	VIB3-18-R1-GC-C	

fn - Bracket, Cutout Extension

<u>Manufacturer</u>		<u>Catalog Number</u>
Aluma-Form		1HCA-C-18
American Connector Engineering		EMB-3-18-GC
Anderson Elec./ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL
Reliable/Bethea	12.5/7.2 kV 24.9/14.4 kV	VIB3-12F-GC VIB3-18-GC
Bethea Metals	12.5/7.2 kV 24.9/14.4 kV	AVIB3-12 AVIB3-18
Chance		C653-1038
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5-LGE IACB-18-5-LGE
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613B PA619B
Hughes Brothers		892-18
McGraw-Edison		DC34B1
Power Line Hardware	12.5/7.2 kV	CA-12-3GL
Universal Electric		SAB-3-18-GC

fo
July 1988

fo - Bracket, Transformer Secondary, Insulated

<u>Manufacturer</u>	<u>Bracket Without Insulator</u>	<u>Bracket With 2-1/4" Diameter Spool Insulator</u>	<u>Bracket With 3-1/8" Diameter Spool Insulator</u>
Chance	-	9113S	9114S
Joslyn	-	J6765-A	J6765
McGraw-Edison	DT4M1	DT4M13	DT4M11
Utilities Service	865	865/208	865/205

fs - Pole Bearing Plate

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Flagg (MIF)</u> P325B	785 (2/20/64)	1. To obtain service and operating experience on cross-braced transmission structures. 2. For determining corrosion resistance. 3. For determining structure uplift capability of the pole under various soil and moisture conditions.
<u>Continental</u> PB-80-7	1114 (5/12/77)	(Same as above)
<u>Reliable/Bethea</u> PBP-156-7	1070 (7/24/75) 1278 (4/12/84) 1371 (10/6/88)	(Same as above)
<u>Dixie</u> D-6370-GR	1210 (4/16/81)	(Same as above)

fu
July 1988

fu - Swinging angle bracket and guying plate

(TRANSMISSION)

Manufacturer

Catalog Number

Joslyn

J22712.3 (Bracket and guy plate)
J22714 (plate only)

fv
January 1989

fv - Guying Attachments
Transmission

Guying Tees

Manufacturer

Catalog Number

Joslyn

J21480-A

Pole Eye Plates

Continental

EPR-66S-12

Flagg (MIF)

PX37D

Reliable/Bethea

PE6-77A

Conditional List
fv(1)
July 1988

fv - Guy Attachments
Pole Bands with Through Bolts
for Transmission Lines

Strength Ratings: 25,000 lbs. ultimate loading
(45° guy angle)*

<u>Manufacturer</u>	<u>Pole Band With Through Bolts and Associated Hardware**</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hughes	3108 C.x	1172 9/20/79	To obtain experience.
		1292 1/10/85	
Joslyn	J26043.xGL (includes fether drive lag screws and thru bolt)	1292 1/10/85	To obtain experience.

*For a 30° guy angle, capacity of pole bands should be derated.

**Appropriate connecting links (Item du(1)) should be ordered with the pole band.

gb - Meter sockets

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Durham</u> M-400 ampere 4 or 5 jaws for use with Class 10 meters	1086 (3/18/76)	1. To obtain experience.
<u>Landis & Gyr</u> Meter mounting device 400 ampere, Type K-4# for use with Type MS-K, 1Ø Duncan meters	947 (7/9/70) 1136 (4/6/78)	1. To obtain experience. 2. To be used only where Class 400 meters are permitted by local regulatory bodies.
Socket type HQ-4S 4 jaws rated for Class 300 service	1136 (4/6/78)	1. To obtain experience. 2. To be used only where Class 300 meters are permitted by local regulatory bodies.
<u>Milbank</u> Type S1079-F, 4 jaws rated for Class 320 service	1103 (12/2/76)	1. To obtain experience.

#Available with UL label.

gj
January 1989

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces
and attaching hardware, fittings and bolts

Crossarm Assembly

<u>Manufacturer</u>	<u>Crossarm Size</u> (inches)	<u>Catalog No.</u>
Brooks	3-3/4 x 4-3/4 x 8'-0"	3102 F2
	3-3/4 x 5-3/4 x 8'-0"	3102 B2
	3-3/4 x 7-3/4 x 8'-0"	3102 I2
	3-3/4 x 7-3/4 x 10'-0"	3102 J2
Cascadian	3-1/2 x 4-1/2 x 8'-0"	C500B
	3-3/4 x 5-3/4 x 8'-0"	C500F
	3-3/4 x 7-3/4 x 8'-0"	C500M
Hughes Brothers	3-1/2 x 4-1/2 x 8'-0"	2890A
	3-3/4 x 5-3/4 x 8'-0"	2890B
	3-3/4 x 7-3/4 x 8'-0"	2892-A
	3-3/4 x 7-3/4 x 10'-0"	2892-B

Twin Arm Spacer*

To be used with standard hardware, 8' x 3-5/8" x 4-5/8" crossarm and 28" wood braces

Flagg	PX240
Power Line Hardware	CAS-455

*Restricted to applications where the conductor's maximum design tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and below.

gw - Crossarm Assembly for H-Frame Construction

Applicable Specification: REA Specification T-7, Revision dated
November 1962
Applicable Drawing : TH-11B Series (161 kV maximum)
No braces (TH-11B)
Two vee braces on outside (TH-11BVO)
Two vee braces on inside (TH-11BVI)
Four vee braces (TH-11BV4)

3-5/8" x 9-3/8" x 33' wood crossarm assembly complete
with attaching hardware, fittings, bolts and 3-3/8" x
5-3/8" braces.

Catalog Nos. or Drawing Nos.

	<u>TH-11B</u>	<u>TH-11BVO</u>	<u>TH-11BVI</u>	<u>TH-11BV4</u>
(Assemblies)	<u>Items</u> gw	<u>Items</u> gw and vo	<u>Items</u> gw and vi	<u>Items</u> gw and vv
American Crossarm and Conduit Co.(1)	70250	7025VO	7025VI	7025V4
Brooks (1,2)	6411	6411-1	6411-2	6411-3
Cascadian (1,2)	CCC11B72	CCC11B72-VO	CCC11B72-VI	CCC11B72-V4
Hughes Bros.(1,2)	C3316-B	C3316-B	C3316-B	C3316-B

- 1 - Fixed spacer fitting sizes as required
2 - Adjustable spacers are available

gw-2
July 1988

gw - Crossarm Assembly for H-Frame construction
(Double Arm) 230 kV (Small Angle)

Applicable Specification: REA Specification T-8
Drawing : TH-231B

Assembly complete with attaching hardware, fittings, bolts and braces.

<u>Crossarm 3-5/8" x 9-3/8"</u>	
<u>Manufacturer</u>	<u>Catalog Number</u>
American Crossarm & Conduit (1)	8026VB
Brooks (1, 2)	64231
Cascadian (1, 2)	CCC231B82
Hughes Brothers (1, 2)	C-3338-B

<u>Crossarm 5-1/8" x 7-1/2"</u>	
Brooks (1, 2)	64231L
Cascadian (1, 2)	CCC231BT
Hughes (1, 2)	C-3338-BL

- 1 - Fixed spacer fitting sizes as required.
2 - Adjustable spacers are available.

gy - Crossarm Assembly for H-Frame Construction
(Double Arm)

Applicable Specification: REA Specification T-7, Revision dated November 29, 1962

Applicable Drawing: TH-10 Series
No braces (TH-10)
Two vee braces on outside (TH-10VO)
Two vee braces on inside (TH-10VI)
Four vee braces (TH-10V4)

3-5/8" x 9-3/8" x 32' wood crossarm assembly complete with attaching hardware, fittings, bolts and 3-3/8" x 5-3/8" braces.

Catalog Nos. or Drawing Nos.

	<u>TH-10</u>	<u>TH-10VO</u>	<u>TH-10VI</u>	<u>TH-10V4</u>
	<u>Items</u>	<u>Items</u>	<u>Items</u>	<u>Items</u>
(Assemblies)	gy	gy and vo	gy and vi	gy and vv
American Crossarm & Conduit Co.(1)	70208	70228	702281	70248
Brooks (1,2)	6410	6410-1	6410-2	6410-3
Cascadian (1,2)	CCC1071	CCC1071-VO	CCC1071-VI	CCC1071-V4
Hughes Bros. (1,2)	C-3316-A	C3316-A	C-3316-A	C-3316-A
Niedermeyer- Martin (1)	N-6710	N-6711	N-6712	N-6713

1 - Fixed spacer fitting sizes as required

2 - Adjustable spacers are available

gy-2
July 1988

gy - Crossarm Assembly for H-Frame Construction
(Double Arm) 230 kV (Tangent)

Applicable Specification: REA Specification T-8

Applicable Drawing: TH-230

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 9-3/8"

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit (1)	8025V4
Brooks (1, 2)	64230
Cascadian (1, 2)	CCC23081
Hughes (1, 2)	C-3338-A
Niedermeyer-Martin (1)	N-6720

Crossarm 5-1/8" x 7-1/2"

Brooks (1, 2)	64230L
Cascadian (1, 2)	CCC230T
Hughes (1, 2)	C-3338-AL

1 - Fixed spacer fitting sizes as required.

2 - Adjustable spacers are available.

gz - Crossarm Assembly for Wishbone Construction "Z" Type
(Single Arm)

Applicable Specification: REA Specification T-5

Applicable Drawings: REA Drawings TSZ-1 and TMZ-1

3-5/8' x 5-5/8" wood crossarm assembly complete with
brace and attaching hardware, fittings, and bolts

The following manufacturers have shown compliance with the applicable
specifications for this assembly:

<u>Manufacturer</u>	<u>Catalog Nos. or Drawing Nos.</u>
American Crossarm & Conduit Co.	601TSZ and 602TSZ
Brooks	64Z1
Hughes Brothers	C-3162-A and C-3162.10

gz-2
January 1989

gz - Crossarm Assembly for Wishbone Construction, "Z" Type
(Double Arm)

Applicable Specification: REA Specification T-5

Applicable Drawings: REA Drawings TSZ-2, and TMZ-2

3-5/8" x 5-5/8" wood crossarm assembly complete with
brace and attaching hardware, fittings and bolts

The following manufacturers have shown compliance with the applicable
specifications for this assembly:

<u>Manufacturer</u>	<u>Catalog Nos. or Drawing Nos.</u>
American Crossarm & Conduit Co.	602TSZ
Brooks (2)	64Z2
Hughes Brothers	C-3162-B and C-3162.10

(2) Adjustable spacers are available.

vx - Cross Brace assembly, 3-3/8" x 5-3/8"
with hardware and fittings (Dwg. TM-110, REA Specification T-7)

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>American Crossarm & Conduit</u>	
Item 1-vx	1100-1
Item 2-vx	1100-2
<u>Hughes Brothers</u>	
Item 1-vx	1042-1
Item 2-vx	1042-2
<u>Brooks</u>	
Item 1-vx	X6685-1
Item 2-vx	X6685-2
<u>Niedermeyer-Martin</u>	
Item 1-vx	N-6714-1
Item 2-vx	N-6714-2
<u>Cascadian</u>	
Item 1-vx	CCC-67-1
Item 2-vx	CCC-67-2

Cross Brace Assembly, 3-5/8" x 7-1/2" Min.
with hardware and fittings

Applicable Specification: T-8
Drawing: TM-110A

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit	1200
Brooks	X-6695
Cascadian	CCC69
Hughes	2061A
Niedermeyer-Martin	N6721

U be - Reclosers, pad-mounted

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
* <u>McGraw-Edison</u> Single phase, vacuum interrupter, Tupe PV4H Maximum voltage 14.4 kV for 12.5 and 13.2/7.62 kV	1373 11/17/88	To obtain experience.

*Ratings greater than 100 amp. for 12.5/7.2 kV application, and greater than 200 amp. for 24.9/14.4 kV application are acceptable only with ground trip devices.

cg - Switch, Air, Three-Pole, Group Operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>S & C</u>		
Omni-Rupter (L), side break	1355	To obtain experience.
horizontal and vertical	1/14/88	
mounting with non-conducting		
crossarm type base and	1371	" " "
insulated interphase and	10/6/88	
control rods,		
15 kV and 25 kV		

(L) Means full-load interrupter accepted and available.

U fw
July 1988

U fw - Secondary Tap Connector

Manufacturer

Type or Catalog No.

Raychem

Compression Connectors

CTE-300-00

CTE-400-00

CTE-500-00

Standard Split Bolt

CTE-300-00

CTE-400-00

U fz - Transformer Connector Block, Insulated
Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Blackburn	Lug	SCU, with lugs and sleeves
Burndy	Lug	Stud Mole with sealing sleeve
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block

Non-Watertight - For use in above grade locations only

Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Connector Mfg. Co.	Set Screw	Uni-Joint Bar Connectors, Series NSC, NDS-C, RLS, SDS-C (Permanent)
	Set Screw	Uni-Joint Bar Connectors, Series NSSC, NDQ-C, RLSS, SDQ-C (Disconnectable)
Electrical Spec. Prod.	Lug	Type SU (Permanent)
	Lug	Types SUR and RDSR (Removable) (With Types LA and A1 lugs and Sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted	GUC Series
	Set Screw	GUS-600S Series
Homac	Lug	DF Series
	Lug	FTU 125 Series (Disconnectable) with flood seal sleeve kit
	Set Screw	LRT Series
Blackburn	Set Screw	TSB-J58C (Permanent)
	Set Screw	TSB-D58C (Disconnectable)
Penn Union	Lug	Type DBAT (Permanent)
	Lug	Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and Sleeves kits
Reliable	Set Screw	15912-REA (Disconnectable)
Utilco	Set Screw	PTF-IN (Permanent)
	Set Screw	PTF-CJU (Disconnectable)

Note: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U fz-2
July 1988

U fz - Transformer Connector Block, Insulated

Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Catalog Number

Electrical Specialty Products

Type SM transformer bushing
connector kit. (Stud to
aluminum cables through 350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

<u>Manufacturer</u>	U gc - Shield, cable riser	<u>Length (Feet)</u>
	<u>Dia. (Inches)</u> <u>Galvanized Steel</u>	
Chance	2 - 3 - 3-1/2	5 - 9
*Electrical Materials	2 - 3 - 4 - 5	5
*#Fargo	2 - 3 - 3-3/4 - 5	5 - 8 - 10
*Joslyn	2 - 3 - 3-1/2	5 - 8
*McGraw-Edison	2 - 3 - 4	3 - 5 - 10
Midland-Ross (Kindorf Snapduct)	2 1/2 - 3 1/2 - 5 (14 ga. galv. steel)	2 1/2 - 5 - 10

Plastic and Fiberglass

Carlton	2 - 3 - 4 - 5	10
Custom Plastics	2 - 3 - 4 - 5	5 - 10
*Electrical Materials (plastic)	2 - 3 - 4 - 5	5 - 10
*Hercules (Haskon) (plastic) (Power Mold, I, II, III)	2 - 3 - 4 - 5	5 - 9 - 10
*Joslyn (plastic)	2 - 3 - 4 - 5	5 - 10
*Nordic (fiberglass)	2 - 3 - 5	5 - 10

(Order by size and length)

#All sizes available with galvanized finish or painted-over galvanizing.

*All sizes available with back plate.

Full Round**

Smith Fiberglass Products (standard wall)	2 - 3 - 4 - 5	30
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**Full round riser shield is to be mounted directly to the surface of the pole with no standoffs.

U gk-1
July 1988

U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Bishop</u>	Stress-Wrap (15, 25 & 35 kV)
<u>Blackburn</u>	Type SKD Stress Cone (15, 25 & 35 kV)
<u>Elastimold (ESNA)</u>	Style 35-MSD (15, 25 & 35 kV)
<u>General Electric</u>	Termi-Matic, Type A or G (15, 25 & 35 kV)
<u>Joslyn</u>	J9275 (15 kV)
<u>3M</u>	Quick Term II Series (15, 25 & 35 kV)
<u>Raychem</u>	Thermofit HVT (15, 25 & 35 kV) CST (15 kV)
<u>RTE</u>	Fasterm Stress Cone (15 & 25 kV)
<u>Sigmaform</u>	Q-Cap Series STK-I (15 & 25 kV)

U gk - Terminations, outdoor
(with mounting hardware)*

(when ordering, specify conductor size, type whether
copper or aluminum, insulation diameter, and type of
mounting desired.)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Blackburn</u>	Type MT (15, 25 and 35 kV)
<u>Elastimold (ESNA)</u> Style 35-MT (35 kV)	Style 16-THG (15 and 25 kV)
<u>General Electric</u>	Termi-Matic, Type G (15, 25 and 35 kV)
<u>Joslyn</u>	"Easy-On II" (15, 25 and 35 kV)
<u>3M</u>	5900 Series 15 kV (4/0 AWG and larger) 25 kV (#2 AWG thru 750 kcmil) "Quick-Term II" (15, 25 and 35 kV) 5600 Series (for bare concentric neutral cable) 5640 and 5650 Series (for jacketed cable)

*Mounting hardware is used to attach termination to mounting bracket (U hd or
U hj).

U gk-2.1
July 1988

U gk - Terminations, Outdoor
(With Mounting Hardware)*

(When ordering specify conductor size, type, whether
copper or aluminum, insulation diameter, and type
of mounting desired)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Bishop</u>	SWO Kit (15, 25 and 35 kV)
<u>G & W</u>	"Eliminator" 15 kV, E 25 kV, E 35 kV, E
<u>Raychem</u>	Thermofit HVT (15, 25 and 35 kV) CST (15 kV)
<u>RTE</u>	Fasterm Series (15 & 25 kV)
<u>Sigmaform</u>	Q-Cap Series STK (15 & 25 kV)

*Mounting Hardware is used to attach termination to mounting bracket (U hd or U hj).

U gn - Enclosures, equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Malton Electric</u>	MEJ Series ME Series MEH Series
<u>Vertex Plastics</u>	1826B, 1Ø 1826C, 1Ø 1881, 3Ø
<u>Galva-Closure Products</u>	Series AG Series BB
<u>Hoffman</u>	U-J Series junction enclosures U-JGS Series ground sleeves
<u>Wheelock and Son</u>	Single phase and three phase

*For pole mounting

**For crossarm mounting

U gn-2
July 1988

U gn - Enclosures, Equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Carolina Dielectrics</u>	Model 0501
<u>Durham</u>	Mini-Section Low Profile I, Low Profile III, and Tri- Section Series
<u>Electrical Equipment</u>	LPT-228-P LPT-249-P 3Ø LPT-266-P 3Ø
<u>Maysteel</u>	CW200 Series CW300 Series
<u>Nordic</u>	ND Series
<u>Western Power Products</u>	Model 24-1 Model 34-2 Model SPM-320 1Ø Model SPM-540 3Ø
<u>Shallbetter</u>	SPMS Series (dead-front)
<u>Willow</u>	WHC Series WRC Series

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U go
July 1988

U go - Fault Indicator
(For Construction Unit UM6-4)

<u>Manufacturer</u>	<u>Type</u>
Edison Control Corporation	Series EC100 (single phase) Series EC300 (three phase) Available with mounting kit KT5002)
Fisher Pierce	Series 1514 (To be used on single-phase circuits only)
McGraw-Edison	Linam
RTE	TPR, LV, MR

U gp-1
January 1989

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcoa	Lug	Interchange-I, ABB Series Use with A-9 insulating boots
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug Set Screw	Series UP(with lugs and sleeves) Series USB(1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Connector Mfg. Co.	Compression Set Screw	Utilug Sure Seal Splice Kits, Series SSK, SSKL Uni-Joint Sure Seal Series SSBC
Electrical Spec. Products	Lug Set Screw	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve) Type UB (with sleeve) splice Type ACL-HSH (6 AWG - 500 kcmil)
Fargo	Set Screw	GU-600 Series
Homac	Lug Lug Set Screw Set Screw	FS-95 Series with flood seal sleeve kit (8AWG - 350 kcmil) FS-125 Series with flood seal sleeve kit (350 - 500 kcmil) SHC Series RAB Series
Kearney	Compression Compression	HCR HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

U gp - Connector Blocks and Splices, Secondary

Non-Watertight - For Use In Above-Grade Pedestals Only

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Blackburn	Set Screw	Type PSB-C
Connector Mfg. Co.	Set Screw	Uni-Joint Series NCA
Electrical Spec. Prod.	Set Screw	UPC Series
Fargo	Set Screw	GUS-6000 Series
Homac	Set Screw Set Screw	CLR-350 Series PVAB Series
Utilco	Set Screw	PED-350-IN Series

U gq
July 1988

U gq - Boot or sleeve, insulated*

Manufacturer

Catalog Number

Blackburn

MPC9
MPC15

Electrical Materials

100-B (For pad-mounted
transformer spade terminals)

*Use restricted to 120/208 volt 500 kVA transformers and larger not equipped with threaded studs.

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
Coil Sales (Charles Industries)	8.25 Dia	31-1/2	CPLP-8
	8.25 Dia	31-1/2	CPLP-8I(Integral Stake)
	10.75 Dia	31-1/2	CPLP-10
	10.75 Dia	31-1/2	CPLP-10I(Integral Stake)
Fargo	8 x 8	38	UP-1520C
	8 x 8	44	UP-1620C
	8 x 12	27	UP-1720C
	8 x 12	44	UP-1820C
	10 x 10	27	UP-2320C
	10 x 10	38	UP-2220C
	10 x 10	43	UP-2420C
Nordic	10 x 16	37	UP-2520C
	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake) PR-150 (stakeless)

*Furnished with stake.

**Pole mounted

U gu-1.1
January 1989

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
Shallbetter	7.5 x 10.25	39	SUTP Series
Reliable	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10-1/2 x 10-1/2	26	UP 10HLP
	16-1/2 x 10-1/2	36	UP 1016HLP
	10-1/2 x 10-1/2	42	UP 10HP
Vertex	8 x 14	30	SP 814
Western Power	8 x 8	30	*SP-8, DF-3 (dead- front)
	9 x 9	30	*SPMC-9-DF3
	9 x 9	30	SPM-90, DF-3 (stakeless)
	9 x 14	30	*SPMC-14-DF3
	9 x 14	30	SPM-140, DF-3 (stakeless)

*Furnished with stake.

**Pole mounted

U gv
January 1989

U gv - Stake, Power Pedestal
Refer to Construction Drawing UK5

<u>Manufacturer</u>	<u>Length Inches</u>	<u>Catalog No.</u>	
		<u>For Power Pedestal Only</u>	<u>For Joint Pedestal</u>
Fargo	42-60-72-78	UP-530S Series	UP-530J Series
Nordic	48-60-72	PM Series	
Reliable	72-78-84	DM Series	DM Series

U hb-1
January 1989

U hb - Cable Accessories
(When ordering specify conductor size, type whether
copper or aluminum and insulation diameter)

(Items on this page are rated for operation on three-phase systems
and may be used on single-phase systems.)

200 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>Blackburn</u>	15 kV, used with loadbreak connectors Type ABOC insulating cap Type JLB2BA bushing plug 25 kV, used with load break connectors Type JLB2C10 bushing plug Type DR2C insulating cap
<u>Elastimold (ESNA)</u>	15 kV, used with loadbreak connectors Style 1601-CL cable lead Style 1602A3R feed thru insert Style 1601-A3R bushing plug Style 160-DR insulating cap 25 kV, used with loadbreak connectors Style 2701-A2 bushing plug Style 270-DR deadend receptacle 35 kV, used with loadbreak connectors Style 3701A-3 bushing plug* Style 370DR(G) insulating cap
<u>General Electric</u>	15 kV, used with loadbreak connectors Switch module 9U02AAB001 Basic connector module 9U05 Series Insulating cap 9U01AEW400 Feed-through insert 9U04AEB001 25 kV, used with loadbreak connector switch module 9U02BAB001 Insulating cap 9U01BEW500 Feed-through insert 9U04BEB001)

U hb - Cable Accessories

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

(Items on this page are rated for operation on three-phase systems
and may be used on single-phase systems.)

Manufacturer

Catalog Number

Joslyn

15 kV, used with loadbreak connectors
Type LBIC152 Insulating Cap

25 kV, used with loadbreak connectors
Type LBIC252 Insulating Cap

RTE

15 kV, used with loadbreak connectors
No. 2603711A12M protective cap
No. 2604797B01M bushing well insert
No. 2637345A01M two-way bushing
well insert

No. 2604231B01 bushing well plug

25 kV, used with loadbreak connectors

No. 2606591A02M protective cap

No. 2604982B01M bushing well insert

No. 2637157B01M two-way bushing
well insert

No. 2604231B01 bushing well plug

35 kV, used with loadbreak connectors

No. 2637592B03M protective cap

U hb-2
January 1989

U hb - Cable Accessories

(When ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Elastimold (ESNA)</u>	15 kV, used with non-loadbreak connectors 600, 650 Series 25 kV, used with non-loadbreak connectors K600, K650 Series 35 kV, used with non-loadbreak connectors 750LR Series
<u>RTE</u>	15 kV Deadbreak termination connectors No. 2637324B (with stud) No. 2637222B (without stud) Push-OP System Optional 200 A. loadbreak tap No. 2637939B 25 kV Deadbreak termination connectors No. 2637324B (with stud) No. 2637222B (without stud) Push-OP System Optional 200 A. loadbreak tap No. 2637940B 35 kV Deadbreak termination connectors No. 2637462B (with stud) No. 2637101B (without stud) Optional 200 A. loadbreak tap No. 2637941B
<u>Blackburn</u>	15 kV, used with non-loadbreak connectors Types 6B and 65B 25 kV, used with non-loadbreak connectors Types 6C and 65C
<u>Joslyn</u>	15 kV, used with non-loadbreak connectors PES86/PSS86 25 kV, used with non-loadbreak connectors PES86--S/PSS86--S
<u>3M</u>	15 kV, Deadbreak termination connectors 5815 Series Modular Splicing System

U he - Enclosures, Sectionalizing Equipment

24.9/14.4 kV

Manufacturer

Catalog Number

RTE

Type LBS, single- and three-phase, pad-mounted, 300 amp
FuseTER Series, single-phase and three-phase

Shallbetter

SPMD Series, single and three-phase,
pad-mounted

Westinghouse

UTE, PAD-PAK pad-mounted switching device,
single and three-phase, 200 amp

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment
(600 amp)

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Chance</u>	Type LVS (submersible and pad-mounted) single-phase and three-phase, vacuum switching equipment, fused or unfused, 200 or 600 amp, 15-25 kV
<u>Electrical Equipment</u>	Type PSI, 15 kV, 25 kV, 600 amp., three-phase switching, and 200 amp., single-phase switching. (When ordering, add suffix B-4)
<u>Elliott</u>	Type EPMR, Single and three-phase, pad-mounted, 25 kV
<u>Kearney</u>	Series VE - pad-mounted, 15 kV and 25 kV, single-phase and three-phase vacuum switching, fused or unfused, 200 or 600 amps Series VP - submersible, single-phase and three-phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

(200 and 600 amp.)

Manufacturer

Catalog Number

Joslyn

Types PG6, PFG6, LPG6, LPFG6, SG6, SFG6
(submersible and pad-mounted, fused or unfused) single and three-phase switching equipment, 200 and 600 amp, 15 or 25 kV

RTE

Type LBS, single- and three-phase,
pad-mounted 15 kV
Type R-VAC, three-phase vacuum switchgear,
15-25 kV

S & C

Mark III, Model PMH (with option G-7),
15-25 kV, 600 amp., three-phase
switching and 200 amp., single-pole
switching
Model PME-15-25 kV, Fully enclosed live
parts at all times, three-phase
switching and 200 amp single pole
switching

Trayer

800 Series, pad mounted three-phase vacuum
switching equipment, 200 and 600 amp.,
15-25 kV with or without fusing
501 submersible vacuum fuse enclosure,
deadfront 200 or 600 amp., 15-25 kV
Type SSA (submersible, fused and unfused)
200 and 600 amp., 15-25 kV

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hf(1)
Conditional List
October 1988

U hf - Jacketed Cable Restoration Kits
(For resealing concentric neutral wires after
installation of splices in jacketed underground cable.)

(When ordering, specify diameter of cable over jacket.)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold</u> PCS-1 Power Cable Seal	1341 (5/14/87)	To obtain experience.
<u>Homac</u> CNC Series Concentric Neutral Cover	1365 (6/23/88)	To obtain experience.
<u>3M</u> HSJ Series (Heat Shrink) SJ Series (Cold Shrink)	1369 (9/8/88)	To obtain experience.
<u>Raychem</u> WCSM (Tubing Type) MWTM (Tubing Type) CRSM (Wraparound Type)	1354 (12/31/87)	To obtain experience.

U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2
Conductor : Copper, #4 AWG and larger
Aluminum, #2 AWG and larger
Insulation : Cross-Linked polyethylene (XLPE)
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Cablec	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

The above cable may be supplied with UL label for Type USE.

U hw
January 1989

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Electromark	7 x 10	REA-1-7x10-SV	REA-2-7x10-SV
	7 x 10	REA-1-7x10-AC	REA-2-7x10-AC
	10 x 14	REA-1-10x14-SV	REA-2-10x14-SV
	10 x 14	REA-1-10x14-AC	REA-2-10x14-AC
	14 x 20	REA-1-14x20-SV	REA-2-14x20-SV
	14 x 20	REA-1-14x20-AC	REA-2-14x20-AC
	20 x 28	REA-1-20x28-SV	REA-2-20x28-SV
	20 x 28	REA-1-20x28-AC	REA-2-20x28-AC
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B
For pressure sensitive decal add "D" prefix			
Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028
Lem	7 x 10	LSS-1400	LSS-1500
	10 x 14	LSS-1401	LSS-1501
	14 x 20	LSS-1402	LSS-1502

*Reflective signs also available.

The signs listed on this page are to be secured to equipment and transformer enclosures by means of an adhesive or by welding. Screws and rivets are not to be used.

U hx
January 1989

U hx - Cable Route Marker

Manufacturer

Surface Mounted

Catalog Number

Chance

C554-0001

Above Grade

Carsonite

REA-100

Chance

C554-0183

Electromark

REA-3-4x7-SV
REA-3-4x7-AC
REA-3-5x12-SV
REA-3-5x12-AC

Lyle

UM12-712

May Advertising

MY45A
MY712A

For pressure sensitive decal add "D" prefix to catalog number.

Truck Sign Service

BCW-712

U hy-1
October 1988

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether
copper or aluminum and insulation diameter)

Manufacturer

Catalog Number

Blackburn

Type S4B (15 kV)
Type S4C (25 kV)

Elastimold (ESNA)

15 kv
Style 1500S, straight splice, through #1/0
Style 25-S, straight splice, #2/0 through
#4/0
Style 15PCJ-1, straight splice, through 4/0
Style 25-Y, Y-splice
25 kv
Style K-25-S, straight splice
Style K-25-Y, Y-splice
Style 25PCJ-1, straight splice, through 4/0
35 kv
Style M-250-S, straight splice

Joslyn

Type PMS152 Straight Splice (15 kV)
#4 through #1/0

3M

Quick Splice/Quick Splice II, 5400 Series
(15, 25, and 35 kV)
15 kv
5411R cable repair splice
5411R/HSJ-1 cable repair splice (for
jacketed cable

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

Manufacturer

Catalog Number

Elastimold (ESNA)

15 kV

Style 650-S, straight splice

Style 15PCJ-2, straight splice,
through 1250 MCM

Style 650-Y, Y-Splice

25 kV

Style K650-S, straight splice

Style K650-Y, Y-splice

Style 25 PCJ-2, straight splice,
through 1250 MCM

35 kV

Style M650S, straight splice

Blackburn

15 kV - S65B Straight splice

25 kV - S65C straight splice

RTE

15 kV

2604904B Series straight splice (MPS-600)

25 kV

2604905B Series straight splice (MPS-600)

U ja-1
January 1989

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Catalog Number</u>
<u>Armorcast</u>	600 Series*, Polymer Concrete
<u>Carolina Dielectrics</u>	Model 0502-1, Fiberglass, Size: 40" x 44"
<u>CDR Systems (Homac)</u>	TP Series*, Fiber reinforced polymer concrete
<u>Chance</u>	C107-0162 and C107-0171 Fiberglass, Size: 40" x 44"
<u>Cyclo</u>	Dwg. No. 730126-2, Molded polyethylene Size: 42" x 42"
<u>Diversitech</u>	TP Series - Fiberglass reinforced concrete
<u>Electri-Glass</u>	Fiberglass LP-4145, 41" x 45"
<u>Formex</u>	Model TP-REA, Molded polyethylene

*Order by catalog number and size.